REMARKS

Reconsideration and further examination is respectfully requested. Claims 1-52 are currently pending in this application.

Rejections under 35 U.S.C. §102(e)

Claims 1-5, 9-22 and 26-34 were rejected under 35 U.S.C. §102(e) as being anticipated by Chaudhuri (US 2002/003864A1). The Examiner is thanked for the thorough response to Applicant's arguments in the previous office action.

Before addressing the specific rejections of the Examiner, Applicant would like to clarify Applicant's statements with regard to Chaudhuri's use of OSPF, and the contention of the Applicant that Chaudhuri does not perform *connectionless packet* ***forwarding.***

First, Applicant would like to support their position that OSPF is a connectionless routing protocol. There are two general well known types of packet routing, source routing (or connection based protocols), where the link is determined prior to the transmission of the packet, and hop-by-hop routing (or connectionless protocols), where each node in between a source and a destination selects the best route to the next node in a route to the destination. Support for this interpretation of routing can be found in the attached except from *Open Systems Networking: TCP/IP and OSI*, Addison-Wesley Publishers, 1993, attached hereto as Exhibit A, which describes, at page 2:

Source Routing and "Hop-by-Hop"Routing"
The routing operations of finding out how to get from here to there, and then actually getting from here to there, can be done in two (very different) basic ways. In source routing, all the

> information about how to get from here to there is first collected at the source ("here"), which puts it into the packets that it launches toward the destination ("there"). The job of the intervening network (with its collection of links and intermediate systems) is simply to read the routing information from the packets and act on it faithfully. In hop-by-hop routing, the source is not expected to have all the information about how to get from here to there; it is sufficient for the source to know only how to get to the "next hop" (perhaps an intermediate system to which it has a working link), and for that system to know how to get to the next hop, and so on until the destination is reached. The job of the intervening network in this case is more complicated; it has only the address of the destination (rather than a complete specification of the route by the source) with which to figure out the best "next hop" for each packet.

Applicants' claims, as amended, clearly recite the use of the OSPF protocol for forwarding packets. The OSPF protocol is a link-state routing protocol, wherein link status is exchanged by nodes and stored in a link state table. OSPF forwarding is connectionless forwarding, wherein whenever a packet is received at a node, the node uses the link state table to determine which node is the next best hop on towards the destination. Support for Applicant's interpretation of the OSPF protocol can be found in the attached Exhibit B: *OSPF Version 2,* Internet Engineering Task Force (IETF) Request For Comments (RFC) 1247, July 1991 by Moy.

Applicants would contend that Chaudhuri does not disclose connectionless *forwarding of any kind*. Rather, Chaudhuri describes

Applicant does acknowledge that Chaudhuri mentions the use of the link state aspects of the OSPF protocol to identify resource usage; however, it is explicitly stated in Chaudhuri that Chaudhuri does *not* use connectionless OSPF forwarding. Rather, Chaudhuri states at page 4, paragraph [0044] :

> "...For purposes of the present invention, the ***shortest path routing feature of OSPF is not being used for managing optical connectivity.*** The present invention uses OSPF or similar IP-based routing protocols *to propagate information about optical network resources.* An arbitrary algorithm is then used at the first-hop router (e.g., an adaptive routing algorithm) to calculate the lightpath route for each new request. ..."

Applicants also note that Chaudhuri clearly distinguishes a connection oriented network from a connectionless network. For example at page 1, paragraph [0006] states:

"... There is an underlying conflict, however, between the typical datagram (connectionless) service that supports the best-effort data delivery of the Internet and virtual circuit (connection-based) service. This conflict is exacerbated in the world of optical networks..." Applicants view the above descriptions of Chaudhuri as explicitly teaching away from the claims of the present invention. Applicant would submit that one of skill in the art, using the teachings of Chaudhuri, would be discouraged from using a connectionless solution, with OSPF forwarding, but rather would use the constructed light-paths endorsed by Chaudhuri.

Rejections under 35 U.S.C. §112, first paragraph

Claims 1-49 were rejected under 35 U.S.C. §112, first paragraph for failing to comply with the written description requirement due to the use of the term 'connectionless packet forwarding.' In order to expedite allowance of this application, Applicants have amended the claims to recite the limitation of OSPF packet forwarding, described at pages 7 and 21-22 of Applicants' specification. Accordingly it is requested that this rejection be withdrawn.

Rejections under 35 U.S.C. §102

Claims 1-5, 9-22 and 26-34 were rejected under 35 U.S.C. §102(e) as anticipated by Chaudhuri. For at least the reasons described above, and in particular due to the fact that Chaudhuri fails to disclose or suggest 'for performing open shortest path first (OSPF) forwarding', as recited in claim 1 it is requested that this rejection be withdrawn

Independent claims 18 and 35 include limitations similar to those that differentiate claim 1 over Chaudhuri and for at least this reason, those claims are also patentably distinct over Chaudhuri, and the rejection should be withdrawn. Dependent claims 2-17, 19-34 and 36-49 are dependent claim sets which server to add further distinctive limitations to their respective parent claims 1, 18 and 35, but are allowable for at least the reason put forth above with regard to their parent claims.

Rejections under 35 U.S.C. §103

Claims 6-8 and 23-25 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chaudhuri. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Applicants submit that one would not be motivated to modify the teachings of Chaudhuri to provide a system that uses a connectionless protocol, because Chaudhuri teaches that it is preferable to use a virtual circuit. It is well established that "..."[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In*

re Preda, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968)..." Applicants submit that one would infer, from the teachings of Chaudhuri, that the connection oriented routing taught by Chaudhuri was preferable to connectionless routing such as OSPF from at least the paragraphs of Chaudhuri provided above. Accordingly, for at least the reason that there is no motivation to modify Chaudhuri, the rejection is improper and should be withdrawn.

Claims 35-49 were rejected under 35 U.S.C. §103(a) as being unpatentable over Chaudhuri et al. in view of Kirby (U.S. 6,647,208) B1.

Kirby:

Kirby describes, at lines 27-39:

> "…based on the core network topology, hybrid switch circuits communicate amongst each other and peripheral nodes over at least a first dedicated wavelength to establish a flow path and assign a wavelength to be used for routing optical data signals. Each hybrid switch circuit includes an optical switch for switching optical signals based on the assigned wavelength to an optical fiber in the established flow path… Additionally, each hybrid switch circuit includes an electronic controller for monitoring traffic on the first dedicated wavelength and controlling the associated optical switch. *Once a flow path is established, data is transferred on an assigned wavelength between peripheral nodes on the core network. …*" (Emphasis added by Applicant)

Kirby further states, at column 6, lines 21-25:

> "… Optical switch 205, on the other hand, is a slave device that directs data from optical inputs 230 to optical outputs 247 through flow paths based upon settings issued by optical switch control processor 210 rather than upon destination information encoded within the signals themselves. Routing an optical signal based on information within a given data packet is less efficient because the entire contents of such a data packet or optical signal must be stored and, after determining the destination of the signal based on information within the signal, the original signal and its contents must be re-created and transmitted to the appropriate destination…" (Emphasis added by Applicant)

It is clear, from reviewing the figures and specification of Kirby that Kirby describes a source routed system, wherein the path from a source to a destination node is determined at the source and propagated through the intermediate nodes to the destination using the dedicated channel T1 (232 in Figure 2). That is, a circuit is set up between the source and the destination. For example, Kirby describes, at column 7, lines 10-11 "…the dedicated wavelength T1 supports the setup of data transfers between two or more regional networks…" Kirby teaches against 'using destination information encoded within the signals themselves…' as 'inefficient', but rather dedicates a separate channel for control. Such a tunneled connection is similar to the virtual circuit described in Chaudhuri.

In order to support a rejection under 35 U.S.C. §103, *every* limitation of the claims should be shown or suggested by the combination of references. Applicants' submit that the combination of Kirby and Chaudhuri fails to meet this requirement for at least the reason that the combination fails to teach 'performing connectionless packet forwarding' as recited in the claim.

Accordingly, as described above with regard to Chaudhuri, the claimed invention includes the capability of '. wherein the routing information is used to dynamically control the forwarding of subsequent optical data streams transmitted at the given wavelength through the optical switch logic to one of the output optical interfaces on the at least one optical fiber for performing connectionless packet forwarding. ' No such structure is shown or suggested in Chaudhuri or Kirby, or the combination thereof. Accordingly, for at least this reason it is respectfully submitted that the rejection is overcome and should be withdrawn. Dependent claims 36-49 serve to further limit claim 35 and are allowable for at least the reasons put forth with regard to claim 35.

Conclusion:

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

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Date

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